

VIII. *Notes on the Lepidoptera collected in Madeira by the late T. Vernon Wollaston.* By GEORGE T. BAKER, F.L.S.

[Read December 3rd, 1890.]

PLATE XII.

IN the early part of the present year I was much interested to see Mrs. Wollaston's collection of Madeiran insects, comprising both those taken by herself as also many taken in earlier years by her much lamented husband. When making another call on my friend at Teignmouth, I was very gratified by her generous offer to place nearly all the collection at my disposal, and thus save to science a record that would otherwise have perished. At present but little is known of the Lepidoptera of these islands, as also of the Cape de Verdes and the Canaries, though the latter have recently been attracting more attention; but for years nothing has been written about the Madeiras. It appears to me, therefore, that this may be a fitting opportunity, after describing and cataloguing the species before me, to collate and tabulate all that is known of the insects of the Atlantic Islands, in so far as it may be possible to do so.

The literature on the Lepidoptera of Madeira may be said to be comprised in two papers, both published in the 'Annals and Magazine of Natural History,' *viz.*, the first, by the late T. V. Wollaston, "Brief diagnostic characters of undescribed Madeiran Insects," 3rd series, vol. i.; and the other by Mr. Stainton, "Notes on Lepidoptera collected in Madeira by T. V. Wollaston, Esq., with descriptions of some new species," 3rd series, vol. iii., p. 209. These appear to have been entirely overlooked by the majority of continental entomologists; even Dr. Staudinger did not know of them until a very few years ago. Mr. Stainton's paper, being easy of access, will only be referred to occasionally, as we come to the insects therein described; but Mr. Wollaston's

paper, though of equal accessibility, consists almost entirely of short Latin descriptions of the various species mentioned (as its title implies), and I therefore propose to transcribe these, and add thereto another careful description in English, where possible, from his types, but otherwise from specimens in my possession. It will be seen from what follows that there is a tendency to considerable variation among the individual species, generally in the direction of melanism. Various theories have been broached to account for melanic variation, but in this instance temperature, *i. e.*, lowness of temperature, cannot be the cause; the probability is that humidity of climate (another of the more recent propositions) may have been a potent factor therein.

Passing on now to catalogue the collection, and following the general order of Staudinger's list, the first insect is

Pieris brassicæ var. *Wollastoni*.

Of this insect there is a considerable series, which, I think, will prove it worthy of its varietal name. It is, moreover, an interesting instance of insular deviation from the original type. In the deepening and enlargement of the black spots on the fore wings it forms a transition between *brassicæ* and the Canary form *cheiranthi*, whilst in the greener colour of the under surface of the hind wings it recedes in the contrary direction. The upper side of the ♂ is practically indistinguishable from *brassicæ*, but on the under side the two black spots are larger and often connected by a dark scaling, making them almost appear to be one large patch. There is, however, a greater difference in hind wings and the apical area, which in *brassicæ* are of a yellowish grey hue, whilst in this variety the colour is greenish grey, the distinction being caused to some extent by the darker grey irrorations of v. *Wollastoni*. From *cheiranthi* the Madeira form differs also chiefly on the under surface, the former of which can be recognised at once by the broad black band of the upper wings (formed by the coalescence of the two black spots), and also by the deep yellowish buff of the secondaries.

The ♀ sex from Madeira shows some little variation. All are much darker than the parent species, but none

so dark as the Canary form. Nevertheless, the darker forms approach *cheiranthi* more nearly than the paler ones do *brassicæ*. The two spots on the fore wings are quite twice as large as in the latter, each being extended over the two veins and joined together in the centre by a black dusting; the black dash on the inner margin is likewise larger, and joined to the lower spot. They never, however, form the broad band, which makes *cheiranthi* so conspicuous and handsome an insect. The dark apical area is usually as large and as dark as in that species. The yellowish hue of the secondaries not infrequently extends to the fore wings also, a circumstance I have never noticed in the Canary form. The colour of the hind wings is occasionally quite as deep as the paler specimens of *cheiranthi*, but, as a rule, they (the hind wings) are paler, and the black marginal spot is never as large. On the under surface the spots are always decidedly larger than in *brassicæ*, but never joined, *i. e.*, in the fifty specimens before me, as they are in *cheiranthi*, whilst the colour of the apical area and secondaries is always greener and greyer than in our common species, thus deviating in exactly the opposite direction from *cheiranthi*, which is usually of such a handsome deep yellowish buff. It is clear from the foregoing that we have here a distinct transitional form from *brassicæ* to *cheiranthi*, without having to go so far as India for it. I may mention also that my largest Madeira specimens are not so large as the smallest Canary one I have.

Colias edusa, F., and var. *helice*, Hb.

Common, and similar to the European form, some being, however, unusually large.

Rhodocera cleopatra var. *maderensis*, Feld. (Pl. XII.,
figs. 1, 1 a).

This also is common in Madeira, and is interesting, inasmuch as it forms a connecting link between the ordinary Mediterranean form and that found in the Canaries, viz., *cleobule*, Hb. The Madeira ♂ specimens have the whole of the fore wings deep reddish orange colour, with only the narrowest border of yellow at the apex and hind margin, and the hind wings are also of a somewhat deeper hue. The under surface is likewise of

a deeper and more uniform yellow, whilst the central spots are much darker; there are also present, about midway between them and the posterior margin, a row of small dark dots, extending half across the fore wing from the costa, and all round the hind wing.

In the ♀ the difference is less marked, the colour being slightly deeper than in the ordinary form, this being more apparent in the secondaries; the central spots are also decidedly larger and brighter, whilst the extreme margins, both costal and posterior, are finely edged with deep orange. The same differences apply as to the under surface, and there are also generally present the rows of small dark spots, already mentioned in the ♂.

The Canary form of both sexes is deeper in colour, and the orange extends right fully up to the posterior margin.

Polyommatus phleas, L.

Common. The usual form of this species is very dark, both the wings being suffused all over with very dark scales. I have one or two paler specimens, but they are evidently rare, the ordinary ones being certainly darker than v. *eleus*. I have before me specimens from almost every country where it obtains, but, with the single exception of one extraordinary and almost black *eleus* from Broussa (Asia Minor), none are as dark as the Madeira insects.

Lycæna batICA, L.

Common, and does not differ from the usual European type.

Vanessa atalanta, L.*

I have but three specimens labelled, by Mr. Wollaston, "the Mount," showing that it and *callirhoë* inhabit precisely the same area. These three do not deviate from the ordinary form.

Vanessa callirhoë, F.

Mrs. Wollaston tells me that this is abundant at low and intermediate elevations. All the specimens before me are smaller and darker than my Amoor examples; the white spots are much smaller, and all the coloured

markings reduced somewhat. Mr. Wollaston says, "Porto Santo specimens are permanently smaller than in Madeira proper" ('Variation of Species,' p. 74).

Mr. Leech tells me that Canary specimens are quite as large as those from the East.

Herr S. Alpheraky writes, in vol. v. of 'Romanoff's Memoires,' p. 218, "In spite of the opinion of lepidopterists, I cannot recognise in this species anything else than a variety of our European *atalanta*;" and he goes on to base his arguments mainly on the fact that Mr. J. H. Leech reared five *atalanta* out of several hundred larvæ supposed to be *callirhoë*. This really proves nothing at all, for, as Mr. Leech tells me, he made no special notes on the larvæ, and did not take a description of them, so that out of the great quantity he had nothing is more probable than that the five were overlooked, especially as then he was not particularly interested in the species. The much more probable solution of the fact of the two species being found together, in both the Madeiras and Canaries, is (as Mr. Leech has suggested) that *callirhoë* is the indigenous species, and that *atalanta* has been recently introduced. This solution is also strengthened by the fact that the latter is a very much scarcer species, whilst the former is abundant in both groups of islands.

Dr. Christ, in a paper on the "Insects of Teneriffe" (Mitth. d. Schweizer Ent. Soc., vol. 6, p. 340), says that *callirhoë* holds the same relation to *atalanta* that *cheiranthi* does to *brassicæ*. This, certainly, is not the case in Madeira, if it is in Teneriffe, for both the former species are found flying together in Madeira, whereas only *Wollastoni* (the Madeiran form of *brassicæ*) is found there, for, out of all the specimens of this insect before me, there is certainly not one true *brassicæ*. Evidently, therefore, the two cases are not analogous in this instance.

Vanessa cardui, L.

Similar to the ordinary type, but perhaps somewhat paler; common, as usual.

Argynnis lathonia, L.

Abundant, and of the usual form.

Satyrus semele v. *maderensis*. (Pl. XII., figs. 2, 2 a).

The form of this species is, I consider, quite sufficiently modified to warrant a varietal name. It is so very uniform in coloration and so much darker than the usual type, and is so thoroughly constant, that Mr. Wollaston himself considered it to be "a fixed geographical modification" ('Variation of Species,' p. 34).

The whole of the upper surface is uniform dark brown (darker than any *semele* I have ever seen), and without the dusky transverse band near the margin of the fore wings, though very occasionally there is the slightest trace just visible. The two black spots near the hind margin of the primaries are present as usual, and are sometimes pupilled with white. In the secondaries there is generally a trace of the transverse band, and near the anal angle there is a black spot encircled with tawny and pupilled with white. On the under surface there is no difference in the pattern of markings, but the marbling of the hind wings is darker and richer in colour, and the whitish band is broader and whiter, whilst the brown posterior margin of the fore wings is broader and darker, extending between the spots.

In the ♀ the colour is likewise darker, the pupilled spots are present as usual in the primaries, but the tawny encircling of the apical spot is smaller and duller, being reduced to a short dash on each side, whilst the surrounding tawny patch of the lower spot is quite dusky, and decidedly smaller than in the ordinary form. The secondaries are also rather darker and duller, the tawny band, being replaced by the whitish band of the under side, showing through; the ocellated spot near the anal angle is present as usual. The under side is darker in every particular, and the dark posterior margin is much broader, and extends as a patch between the two black spots.

I have been unable to trace any record of this insect from the Canaries or other Atlantic islands.

Pararge xiphia, F.

Mrs. Wollaston says this is one of the commonest species in Madeira at intermediate elevations, and wasted examples may be found throughout the winter,

especially in the district above Funchal, called "the Mount." It was described by Fabricius in 1775 from Madeiran specimens.

Xiphia is now so well known that it is quite unnecessary to redescribe it. There is no doubt in my own mind that it should retain its specific rank, but the present seems to be a good opportunity of settling the position of var. *xiphioides*, which insect is certainly a form of *ægeria*, and not of *xiphia*.

The whole of the markings of *ægeria* are carefully reproduced in var. *xiphioides*, the difference being that the Canary form is much darker and richer in colours in all respects, and that the spots are somewhat reduced in size. If in our own common form of *ægeria* (*ægerides* of Staudinger's Catalogue) the olivaceous brown was replaced by a deep rich umber and the pale spots altered to a pale sienna, we should have var. *xiphioides* exactly, only perhaps a trifle smaller than the average size of the Canary insect. The same remarks apply to the under side, the only difference being great intensification and richness in colour.

Between the Madeiran *xiphia* and these two insects there appear to me to be constant differences. The two spots in the median portion of the wing are quite wanting in the former; the whole of the posterior margin is entirely dark, there being no pale border or pale spot therein; and the streak or short dash on the secondaries within the ocellated row is much increased in size, often extending three-quarters across the wing. Furthermore, the ♂ is adorned with a patch of long downy scales in the primaries, extending all over the discal cell, smoothed down from the costal towards the inner margin, and terminating in a blackish line just below the said cell. The under side is rather variable as to the hind wings, the general hue being much richer, with an absence of markings (a sort of obsoletion) and uniformity of colour; this, however, is sometimes varied by great contrast, from rich red-brown to grey and white, this being caused by the great intensification of the hue of the usual pattern. Added to this, the Madeiran species is uniformly much larger than either *ægeria* or var. *xiphioides*; the smallest *xiphia* is decidedly larger than the largest var. *xiphioides* I have ever seen, whilst the latter is larger than the common European species. In

xiphia, again, the ground colour is darker and richer than in either of the other insects, and the spots are more reduced even than in the Canary form, and are also often much obscured.

Out of thirty-five *xiphia* before me, the average size is ♂ 49, ♀ 58 mm. The largest ♂ is 50 mm., whilst my two largest ♀ measure 64 mm., and the smallest ♂ is 47 mm. bare, but this is evidently an abnormally small specimen; whereas the largest ♀ var. *xiphioides* is 45 mm., *i. e.*, two millimetres smaller than the unusually small Madeira ♂.

Acherontia atropos, L.

Differs in no respect from the usual type.

Sphinx convolvuli, L.

Common in Madeira, but does not differ at all from either my British or European specimens. There are none of Dr. Christ's variety *batatae* among those before me.

Deilephila titymali, B.?

One specimen; too worn to identify with certainty.

Deilephila lathyrus?

Two specimens, which are very much nearer this Indian species than any other. They certainly are not *titymali*, whose wings are a different shape; and being so very close indeed to *lathyrus*, I deem it wiser to place them under this insect.

Deilephila livornica, Esp.

Similar to the usual type.

Macroglossa stellatarum, L.

Common. Similar to the European insect, but perhaps a little darker in colouring.

Deiopeia pulchella, L.

The only specimen taken has the fore wings very much less spotted than usual.

Bryophila maderensis, n. sp.

Primaries uniformly dark grey. The dark central area is enclosed on the basal side by a pale grey wavy, almost perpendicular, stripe, and on the posterior side by a very frequently and sharply toothed black line, edged on the outer margin with whitish, which line recedes well back between the median and submedian veins, but advances again from the latter to the inner margin; this line is occasionally somewhat indistinct, so as to almost make the whole of the hind three-fourths of the wing look uniform dark grey. The reniform stigma is more distinct than usual, being defined by a fine black margin immediately above it. The costa has two whitish spots; the extreme posterior margin is rather paler than the central area, with a somewhat roughly spotted appearance. The fringes are grey, with the usual dark dividing line strongly scalloped. Secondaries uniform dark brownish grey; fringes paler grey, with a dark dividing line. Thorax and abdomen same hue as the primaries and secondaries, respectively. Al. ex., 28—29 mm.

This species does not come very near any European species, but approaches closest to *algæ*, but may be at once separated from it by the absence of any green tinge, by its uniform dark grey hue, and by the dark central area being bordered on its basal margin by a whitish grey band, and by the serrated line on its posterior margin. Not uncommon in Madeira.

Agrotis (Tryphæna) pronuba, L.

Abundant in Madeira, and variable as usual.

Agrotis saucia, Hb.

Abundant, and similar to British examples in all respects.

Agrotis segetum, Schiff.

Fairly common around Funchal, and variable as usual.

Mamestra (Hecatera) maderæ, n. sp. (Pl. XII., fig. 3).

Primaries rather dark ash-grey; orbicular and reniform stigma very distinct, and encircled with a black line. Of the toothed transverse lines, the first, by the base, is pale, edged on each side

with black, extending from the costa to the lower median vein; the second, before the orbicular stigma, likewise paler grey, and margined on each side with a black line, extends all across the wing; the third is a single fine black line all across the wing, and cutting the base of the reniform stigma; the fourth curved and very frequently toothed line, is just beyond that stigma, and is edged posteriorly with pale grey; the subterminal line is paler and edged interiorly with dark grey, and is somewhat interrupted. The ground colour is paler grey from the fourth line to the hind margin, which margin is darkly dotted. Beneath the orbicular stigma is an oval pale spot, encircled finely with black. The costa has a pale spot over the reniform stigma. Secondaries pale grey, with a broad dark posterior border edged anteriorly by a light hue, which is again margined by a dusky line. Fringes of primaries grey, the outer half is tessellated with white. Fringes of secondaries grey, with paler extremities. Head and thorax pale grey; abdomen somewhat darker. Al. ex., 34 mm.

One specimen only in the National Collection.

This insect is nearest *Hillii* (Grote), but can be recognised by its uniformly much darker colour, and it has no pale blotch on the inner margin at the anal angle.

It is readily distinguishable from *serena* by its much more uniform and dark colour, and by the absence of any pale patch by the basal and posterior part of the wings.

Epunda albstigmata, n. sp.

Primaries brownish grey, with a short black dash from the base; between the base and the discal cell the central area is decidedly darker than the rest of the wing; the orbicular stigma is white and *v*-shaped; the reniform stigma is grey, broadly encircled with white; on the costa, between this and the apex, are three small whitish dots, a submarginal row of pale grey spots extends from the apex to the inner angle. The scalloped hind margin is faintly edged with black. Fringes pale yellowish, with a dark margin. Secondaries grey, dusted with brownish, and having a line of darker shading beyond the centre, with the blackish central spot of the under side showing through. Fringes as in primaries. Antennæ pectinated. Al. ex., 46 mm.

I have but one specimen of this insect, labelled "San. Antonio de Serra," which is about 2000 feet. It is nearest *E. mamestrina*, Butl., but differs in that the

general hue is browner, whilst the orbicular stigma is white; moreover the dark central area is more restricted and defined, being roughly triangular in shape. The secondaries are also browner, and have a dark transverse line beyond the centre; whilst the antennæ are pectinated like *Grotei*, and not pubescent like *mamestrina*. Its correct position will be between these two species.

Hadena atlanticum, n. sp.

Primaries reddish brown, with a short distinct basal black dash forked from its centre, just beyond which is a small indistinct dusky patch on the inner margin; orbicular stigma encircled by a fine black line; reniform darker than the ground colour on its inner margin, then somewhat paler, the posterior margin being edged with whitish; between these two stigmas the ground colour deepens in its tone. The blackish and sharply dentated line, just beyond the reniform stigma, has scarcely a trace of the lighter edging so often seen in *adusta*. The reddish yellow subterminal line is very much interrupted, and almost resolves itself into a row of buff spots, and it lacks the preceding row of dark spots usual in the aforesaid species; the posterior margin is finely scalloped with blackish. Fringes paler than ground colour, with a dark dividing line. Secondaries brown, darker around the posterior margin. Antennæ pectinated in both sexes. Al. ex., ♂ 43, ♀ 45 mm.

From *adusta* (its near ally) it can be separated by its more uniform and altogether redder appearance, by its uniform brown hind wings, and by its pectinated antennæ.

I have a ♂ and ♀, bearing the labels in Mr. Wollaston's writing, "The Mount" and "San. Antonio de Serra," respectively, both of which are stations of about 2000 feet, or somewhat more.

Eriopus Latreillei, Dup.

Of this insect I have seven specimens, all of which agree *inter se*, and they are a beautiful form of the ordinary type. Instead of being of the usual colour, they are all suffused with a very pretty rosy tinge, more especially over the hinder half of the wing; the markings are also of a deeper and richer colour, the two thus combining to make a very pretty insect out of a rather dull one. The rosy tinge also extends to over the hairy tufts of the fore legs, over the outer portion of the under

surface of the hind wings, and to a less extent over the under surface of the primaries.

Prodenia littoralis.

Common, but similar to the usual form.

Phlogophora periculosa and var. *brunnea.*

This very variable North American insect is not uncommon, and varies in like manner to the American specimens; there are two of the dark variety *brunnea*.

Phlogophora Wollastoni, n. sp.

Primaries brownish pink, with the posterior margin darkly and broadly edged, the apical half of which is dusted with fine lustrous greyish scales, as also is the costa from the upper part of the discal cell. The orbicular and reniform stigma are of the same somewhat greyish colour; in the middle of the posterior half of the latter is an ochreous patch; from the lower edge of this stigma, and, as it were, continuing the oblique posterior margin thereof, is a broadish stripe of dark reddish grey extending to the inner margin; beyond this are three indistinct spotted fine lines of greyish shading, the first of which is only visible for its lower half, the second extends obliquely from near the apex to the inner margin; these are followed by a paler stripe of the ground colour, which has a double border of reddish brown and pale ochreous, which ochreous line touches the lustrous grey marginal edge. About midway between the base and the orbicular stigma is a grey transverse line extending from the costa to the inner margin. Fringes brownish pink, with a pale edging, and scalloped as usual, but not hollowed out internally by the anal angle. Secondaries pinkish grey, with a narrow greyish margin, followed by a broad band of paler pinkish to near the centre, from whence the colour becomes greyer to the inner margin. The upper margin is pale ochreous for its first two-thirds, beyond which it assumes a pinkish hue. Thorax and abdomen as primaries and secondaries respectively. Antennæ slightly pubescent.

This very pretty insect approaches nearest to *periculosa*, but can be at once separated by its very uniform pinkish hue, and by the entire absence of any darker central area.

Only one fine specimen was taken at S. Antonio de Serra, which measures nearly 50 mm.

Nyssocnemis dubiosa, n. sp.

Primaries umber-brown, with the central area enclosed by the inner line and elbowed line of a deeper velvety brown. The orbicular and reniform stigmata of the usual *Phlogophora* shape, the former being of the same hue as the ground colour, as also the latter, but this is in another specimen of a pale ochreous; the half line at the base of the wings is fairly distinct, and so is the sub-terminal line, which is sharply dentate. Costa with three small pale ochreous dots between the reniform stigma and the apex. Fringes same hue as primaries, with a darker central shading. Secondaries brownish grey, somewhat paler towards the base, with paler fringes, which are scalloped, as is also the posterior margin. Thorax and abdomen as fore and hind wings respectively. Antennæ pectinated. Alar expanse, 39 to 41 mm.

I have been a little doubtful where to place this species. The genus *Nyssocnemis* has the antennæ almost ciliate, but in *dubiosa* they are merely pectinate; in every other feature, however, it is so close an ally to *obesa*, that I think there is no doubt that it should be placed in the same genus with that insect, from which it may be recognised by the antennæ, as just mentioned, and by its rather smaller size. In my insect the orbicular stigma is very distinct, but very indistinct in *obesa*; the secondaries are also darker and more uniform than in that species, which has them of a pale yellowish grey hue, with a broad dark posterior margin.

Nonagria sacchari, Woll. (Pl. XII., fig. 4).

“Alis anticis lutareis, puncto nigro plicæ ante medium, altero disci in medio, serie curvata punctorum nigrorum pone medium, linea transversa nigra fere ad marginem postremum; alis posticis albidis immaculatis. Exp. alar. $17\frac{1}{2}$ lin.”*

Primaries uniform brownish grey, with a small black dot before the centre just beneath the discal cell, and generally another indistinct one about the centre, which, however, is not quite constant; between this and the posterior is a curved row of small black dots, and close to the hind margin, but not absolutely on its edge, is a line of black composed of small dots. Fringes pale brownish grey. Secondaries whitish, tinged with grey. ♂ antennæ

* ‘Annals & Mag. of Nat. History’ (1858), 3rd Series, vol. i., pp. 117, 118.

slightly pectinate, ♀ pubescent. Thorax and abdomen same as primaries. Alar. ex. about 37 mm. ♂, 42 ♀.

In the same paper from which this is transcribed, Mr. Wollaston writes :—"Inhabits Madeira proper, and has probably been imported into the island, being extremely destructive to sugar-canes. The caterpillar, which may be taken during the summer months, lives in the interior of the stem, where it does incalculable damage to the cane, more or less spoiling the entire crop. I am indebted for an excellent specimen of the imago to C. Bewicke, Esq., who reared several of them in Funchal during the autumn of 1855, and who communicated to me some interesting observations concerning the habits of the insect. It appears totally distinct from the *Diatræa sacchari* of the Rev. Lansdown Guilding (Trans. of the Soc. of Arts, vol. xlvi., p. 148, A. D. 1828); as also from the *Proceras sacchariphagus*, Bojer (described in the 'Report of the Committee on the Cane-borer,' and published at the Mauritius), which belongs to an altogether different family, the *Pyralidæ*; as well as from the *Noctua sacchari* of the 'Papillons de Surinam' (pp. 135, 136, pl. 64, A. D. 1848)."

Leucania extranea, Gn.

Abundant; most of the specimens are labelled San. Antonio de Serra, which shows that it is common at an elevation of at least 2000 ft.

Caradrina quadripunctata, Fab. (*cubicularis*).

Two specimens, one of which is labelled Funchal.

Caradrina exigua, Hb.

One fine specimen in the National Collection, taken by Mr. Wollaston.

? *Calyptia ferruginca*, Walker.

This species was described by Walker under the genus *Hydrelia* from a single insect, with the label, "This species has been taken by W. D. Crotch, Esq., in Teneriffe." I have before me seven specimens from Madeira, which show that it cannot belong to that genus. It appears to me to be nearer *Cosmia*, and, after care-

fully comparing its characteristics, I have come to the conclusion that its best resting place will be in Hübner's genus *Calymnia*, in which I therefore place it with a (?).

Cucullia chamomillæ, Schiff.

One specimen, which does not differ from our own specimens.

Plusia aurifera, Hb.

Fairly common.

Plusia chalcitis, Esp.

Common at low and intermediate elevations.

Plusia gamma, L.

This ubiquitous insect is not uncommon, and presents no points of difference from the ordinary type.

Plusia circumflexa, L.

Very common; two of the specimens are labelled by Mr. Wollaston "Funchal," but it is improbable that it is confined only to this low elevation. Some of the series are very richly and beautifully coloured.

Heliothis peltiger, Schiff.

One specimen in the National Collection from Mr. Wollaston.

Heliothis armiger, H.-S.

Three specimens without a precise locality.

Acontia lucida, Hufn.

Two specimens, rather darker than usual, from Madeira and Porto Santo.

Thalpochares ostrina, Hb., and var. *astivalis*, Gn.

The two specimens of the former are richly coloured; the second generation presents no difference whatever from Algerian specimens.

Spintherops dilucida, Hb.

There is one specimen of this insect in the National Collection, taken by Mr. Wollaston, which is very much paler than any of my specimens from the South of France.

Hypæna lividalis, Hb.

There is one specimen of this insect which does not differ from the ordinary type.

Hypæna obsitalis, Hb.

Very common, and, as usual, very variable, many of the specimens being almost black.

Hypenodes costæstrigalis, Steph.

Not uncommon, and somewhat darker than the ordinary form, one specimen being very dark indeed.

Nemoria nubigena, Woll. (*Hemithea nubigena*, Woll.).

"Alis viridibus, striga posteriore alba communi subindistincta ornatis, costa alarum anteriorum albido-ochracea. Exp. alar. 9 lin."*

The ground colour of both primaries and secondaries is emerald-green; the posterior stripe extends all through both wings, and is white. In some specimens this stripe is fairly broad, but it varies considerably, and in other examples simply consists of an indistinct row of dots. The costa in fresh specimens is pinkish, but becomes ochreous by wear and exposure. The fringes are white, tipped (in a freshly-emerged insect) with pinkish. Abdomen and thorax green. Antennæ ochreous, ciliate in ♂, simple in ♀. Exp. alar. 19 to 22 mm.

In the same work that I have already quoted from, and on the same page, Mr. Wollaston says:—"Inhabits Madeira proper, occurring among the heath-woods of the loftiest elevations. Whilst encamped on the extreme summit of the Pico Ruivo (upwards of 6000 ft. above the sea), early in August, 1850, it flew into my tent in great abundance, attracted by the light of the candle, after sunset."

* 'Annals & Mag. of Nat. History' (1858), 3rd Series, vol. i., p. 118.

Acidalia maderæ, n. sp.

Both primaries and secondaries are of the same hue, and have the same markings carried through them. The colour is ochreous grey, without any markings before the dark central spot; behind this is a fairly distinct but ill-defined darkish broad transverse stripe, beyond which is an oblique wavy greyish line; midway between this and the posterior margin is the broader subterminal greyish line. The margin itself is very finely and darkly edged, and is very slightly scalloped. Fringes same hue as wings. Antennæ slightly pubescent. Exp. alar. 23 mm.

I have two females from Madeira proper.

Acidalia dimidiata, Hufn. (*scutulata*, W. V.).

Common and very variable. I have but one specimen of the type we usually find in England; there are, however, several somewhat similar in general tone, but they have a very broad blackish band all across the centre of the primaries, and extending in like manner through the secondaries. Another very prevalent (in fact, the commonest) form is much darker than usual, and also larger, and of the ordinary pattern, with the addition of an indistinct band across the central area.

Acidalia atlantica, Stainton, (non *atlantica*, Walker).

“Walker’s name *atlantica* must now sink as a synonym of *A. separata*, Walk. Mr. Warren, who has recently gone through the *Geometræ* in the National Collection, considers *Acidalia separata*, Walker, and *atlantica*, Walker, both from St. Helena, in the Wollaston cabinet, to be one and the same species, in which opinion I have not any doubt that he is correct, for it would be impossible to separate some of the specimens, and the main markings are all identical. Walker’s name *atlantica*, therefore, sinks as a synonym of *separata*, whilst Stainton’s name for the Madeira species remains good.”

This species was described by Mr. Stainton in the Ann. & Mag. Nat. Hist., 3rd series, vol. iii. (1859), p. 210, where he says:—“Allied to *Acidalia virgularia*, but paler and neater; the three lines parallel, and distinctly angulated towards the costa; the discoidal spot

placed on the central line, and the hind margin of the hind wings more dentated, the hind tibiæ of the male are incrassated, with no spurs, and the tarsi almost obsolete; the hind tibiæ of the female have one pair of spurs. Inhabits Deserta Grande." I have a few specimens from Madeira, evidently referable to this insect; they are, however, in addition to the distinctions drawn by Mr. Stainton, certainly smaller than *virgularia*.

Acidalia unostriata, n. sp.

Primaries and secondaries uniform pale ochreous, with the usual dark central spot, behind which, but adjoining, is a broad dark grey transverse band extending from the costa to the inner margin, and continued all through the secondaries, but on the other side of the central spot, *i. e.*, between it and the base. There are no other markings at all, except the least trace of a row of very minute dark spots between this and the posterior margin of the primaries. At the extremities of each of the nervules the hind margin is finely and darkly dotted. Fringes rather paler than fore wings. Exp. alar. 22 mm.

One specimen from Madeira appears to be nearest the black-banded form of *dimidiata*, but it can be at once distinguished by the uniform ochreous colour, with no other markings save the dark band. The wings are likewise of a different shape, being narrower and less ample, whilst the costa and hind margin is straighter, thus making the apex sharper.

Acidalia zargi, n. sp.

Primaries pale ochreous, the basal area, extending half-way to the central spot, being of a rather pale chocolate colour; the posterior margin is very broadly bordered with the same chocolate hue, in the centre of which is a waved ochreous interrupted line. The space between these two areas is ochreous, dusted more or less all over, but especially in the centre (where it almost forms a transverse stripe), with fine pinkish rusty scales. The secondaries are likewise pale ochreous, finely dusted with the same coloured scales, which are somewhat condensed around the central spot so as to form a trace of a transverse stripe; otherwise there is no marking until the posterior margin, which is like the fore wings, but rather paler, *viz.*, pale chocolate, with a distinct wavy ochreous submarginal line, preceded, however, by another indistinct ochreous

line just within the chocolate border. Fringes paler chocolate. Exp. alar. 27 mm.

This is a very pretty insect indeed, and it is to be regretted that but one ♀ was taken in Madeira. It is like no European *Acidalia* known to me.

Acidalia Wollastoni, n. sp.

All the wings are uniform dull magenta, slightly deeper in hue by the posterior margin, with a very small central white spot in each. Between this spot and the base there is a faint trace of a jagged transverse buff-coloured line, which line on the secondaries extends from the discal cell to the inner margin. The pinkish ochre subterminal line is very distinct in both the wings, extending to its fullest limit in each. Fringes magenta, with pinkish ochre extremities. Thorax and abdomen as primaries. Exp. alar. 26 mm.

Of this beautiful *Acidalia* there is but one specimen from Madeira.

Acidalia irrorata, n. sp.

Primaries and secondaries pale ochreous grey, finely and plentifully sprinkled all over with minute dull reddish irrorations. There is scarcely a trace of the first line; the grey spots are fairly distinct, as is also the ill-defined central grey transverse band. The scalloped grey subterminal line is also fairly distinct. All the markings of the primaries apply in like manner to the secondaries. The posterior margin is darkly bordered. Fringes ochreous. Antennæ ♂ pectinate. Exp. alar. 26 mm.

One ♂ from Madeira.

Zonosoma (Ephyra) pupillaria, Hb.

I have several of this species, all of which differ from the ordinary type, and are a very pretty form. Both wings are of a pale buff, slightly freckled more or less all over with pink. The central spots white, encircled with pink. The subterminal line is represented by a curved row of pinkish dots. In the ♀ the colour is similar to the ♂, but both the first and subterminal lines are represented by a curved row of dark grey spots finely encircled with pinkish, and the central band is dark grey, indistinctly edged with a few pinkish scales.

Zonosoma (Ephyra) maderensis, n. sp. (Pl. XII., fig. 5,
banded form).

Primaries ochre-colour, finely and densely irrorated with rough pinkish scales, more especially by the posterior margin. The central waved band just beyond the spot is of a greyish hue. The subterminal line is distinct and of paler ochre; posterior margin finely and darkly dotted. Central spot whitish, encircled with reddish brown. The secondaries are likewise ochreous, with all the pattern of the primaries repeated, but the subterminal line is broader than therein. Thorax and abdomen same hue as wings. Antennæ ♂ ciliate, ♀ simple. The ♀ is similar to the ♂. Exp. alar. 26 mm.

This is evidently a common species in Madeira, and, like many others found in the island, it varies considerably. I have specimens almost unicolorous, with scarcely a trace of any markings except the central spot, whilst there are others which are very broadly and darkly banded; one of the handsomest of these will be found figured. Again, I have one or two almost unicolorous fawn-colour, with a single dark grey waved central stripe just beyond the central spot. Mr. Wollaston says of the larva:—"A small green caterpillar with brightly variegated patches on either side. Chrysalis bright pale green, fixed by the tail and slung up horizontally with a single thread. Feeds on Hudson's oak."

Hemerophila maderæ, n. sp. (Pl. XII., fig. 6).

The primaries and secondaries vary from dull umber-brown to a reddish umber. The first and second oblique somewhat parallel lines are dark brown, both arising from the inner margin, the former near the base, and extending indistinctly half across the cell, the latter starting beyond the centre, and extending almost up to the apex. At the tip of the discal cell is a smallish dark spot. The whole of the wing is scaled with darker brown irrorations. The pattern of the secondaries is similar to the primaries, but minus the first line; the ground colour is at times slightly paler, and is thickly covered with dark brown scales taking the shape of short dashes. Thorax, abdomen, and fringes as wings. Antennæ plumose. Exp. alar. 43 to 44 mm.

The ♀ is very pale ochreous grey, with the first and second line as in the ♂, but blackish; the central spot is larger. There is also a blackish shading at the tip of the second line just below the apex of wing, which follows for a short distance the course of the aforementioned black line. Secondaries slightly deeper in hue than

primaries, with the second line blackish and rather broad, and with a slight dark dusting between it and the margin; the first line is likewise distinct and black, whilst the base of the thorax is also black; so that, when the wings are expanded, the first line assumes the form of the crescent. The dark scales on the secondaries are much fewer than in the ♂, and are dark greyish. Antennæ slightly pubescent. Exp. alar. 37 to 40 mm.

There is one very fine variety of this insect in which the whole of the space from the first to considerably beyond the second line, and extending right up to the margin below the apex, is of a very dark and rich umber-brown; and in the secondaries this colour extends from the base of the wings to near the posterior margin, whilst the ground colour is of a more yellowish tint than usual. This insect does not appear to be very near any other species of the genus, but the very different and pale ♀ will serve to distinguish it from its allies.

The figure of this fine insect is rather more highly coloured than my specimens, or than those in the National Collection, but this may arise through them being somewhat faded.

Boarmia Wollastoni, n. sp. (Pl. XII., fig. 7).

Primaries rather dark brownish grey; the first transverse line blackish, closely followed by a second, both being waved and toothed; at the end of the discal cell is a reniform-shaped patch of raised paler scales, edged with black, from whence to the inner margin runs a black line, bluntly toothed near the centre; beyond this is a very frequently and sharply serrated curved transverse black line, followed in its upper third by a row of dark dentations; beyond this is an indistinct waved stripe of paler ground colour, succeeded by an indistinct interrupted scalloped line of whitish, from which to the margin the ground colour is darker. The extreme posterior margin is finely edged with black. The basal and central areas, and also the margins of the transverse lines, are sparingly scattered over with ochreous scales, which are likewise present over the pale stripe beyond the serrated line, though in a less degree. Fringes grey, intersected with darker grey. Secondaries greyish brown, darker on the outer margin, with an indistinct pale scalloped submarginal line, and a darker line beyond the centre. Fringes greyish brown. Exp. alar. 38 to 40 mm.

The ♀ is very pale whitish grey, with all the marks repeated as in the ♂, but in a darker shade of grey. The space between the

two central toothed lines is dark grey for its lower half. Posterior margin darkly dotted. Fringes whitish, with grey extremities and intersections. Hind wings pale grey, marked as in ♂. Exp. alar. about 46 mm.

Var. *obscura*.

Basal area almost black; between the outer basal and the inner central line is a broad band of greyish, over which a few dark scales are scattered; beyond this the whole of the wing is sooty black, with a small apical grey patch, and the pale scalloped interrupted line fairly marked. Secondaries as in *Wollastoni*. Exp. alar. 40 mm.

The ♀ of this variety copies its ♂ precisely, but the colour, instead of being sooty black, is dark dirty grey. Exp. alar. 43 to 44 mm.

This appears to be a constant form, being not improbably the second brood, and as such seems worthy of a varietal name.

Mr. Wollaston describes the larva thus:—“Caterpillar of a pale dirty yellowish buff, with a paler line down the middle of the back, and very obsoletely freckled (or rather pencilled) all over with indistinctly traceable scroll-like markings. The legs and prolegs and the sutures of the segments have a faint rosy tinge. Feeds on common broom.”

Common at St. Antonio de Serra. This species is extremely variable, some being of a palish uniform grey, others almost all black; and, though there are not in the series before me (38) connecting-links between them, I entertain no doubt but that in a really large series every transitional form could be traced.

Eubolia rupicola, Woll. (Pl. XII., fig. 8).

“*Alis anticis fuscis, saturiore lineatis, striga anteriore parum angulata, striga posteriore (extus dentem emittente et albido-marginata), punctis dilutis, maculisque duabus marginem posticum versus nigro fuscis ornatis.* Exp. alar. 16 lin.”*

Primaries umber-brown; basal line darker, palely edged posteriorly, with a very broad dark brown central space (in which are several dark serrated lines), angulated exteriorly and margined with whitish; in the middle of this space is a paler fascia, with a

* ‘Annals & Mag. of Nat. History’ (1858), 3rd Series, vol. i. p. 118.

dark spot in the upper part thereof. Between the basal line and the dark central shade is another dark indistinct line. The sub-marginal wavy line is dark brown, and usually composed of small scallops; between this and the posterior margin there is generally a small dark clouding in the upper part of the wing. Fringes brown. Secondaries paler brown, covered with most indistinct wavy transverse lines, which are occasionally quite obsolete. Antennæ ♂ ciliate, ♀ pubescent. Exp. alar. 34 to 36 mm.

Like several other Madeiran insects, it varies a good deal, the extreme in the one direction being very dark, with the central shade almost black, whilst in the contrary direction the colour is paler than in the type, and the central part of dark space becomes nearly quite white. Another form has the central space broadly edged with white posteriorly, whilst yet another is almost uniform umber-brown, with nearly all the pattern obliterated. This is evidently one of the commonest insects in the island.

Mr. Wollaston, in the paper already referred to, says: —“Inhabits Madeira proper, abounding at intermediate elevations throughout the sylvan districts, and secreting itself generally beneath the overhanging projections of the rocks, which it more or less resembles in colour.”

Sterrhia sacraria, L.

The one specimen taken near Funchal has the pink band very broad, the costa near the base is margined with pink, and there are a few pinkish scales in the median portion of the wing; they are not, however, by any means sufficient to call it *v. sanguinaria*.

Coremia centro-strigaria, Woll. (Genus *Cidaria* of Staudinger's Catalogue). (Pl. XII., fig. 9).

“Alis anticis griseo-ochreis, basi ac area centrali rufescentibus, hæc fasciam nigram extus prope costam acute angulatam includens. Exp. alar. 12 lin.”*

Primaries greyish ochre, with the basal and broad central areas reddish, in the latter of which is a broadish transverse fascia of a dark bluish grey colour, in the upper part whereof is the black central spot; both these areas have several transverse darker wavy lines, and the latter is edged on the outside with whitish, beyond

* ‘Annals & Mag. of Nat. History’ (1858), 3rd Series, vol. i., p. 119.

which is the subterminal scalloped line, followed by a darker clouding of pale reddish up to the hind margin, in which (clouding) is another short pale scalloped line. The same markings are carried through the secondaries with the dark central fascia, and the substitution of darker greyish for the reddish hue. ♂ 22, ♀ 24 mm.

Mr. Wollaston says:—"Inhabits Madeira proper, and is allied to the *C. ligustraria* and *ferrugaria* of more northern latitudes."

Cidaria fluviala.

A common species at low and intermediate elevations, but offering nothing noteworthy, being quite similar to those found in our own island.

Gymnoscelis insulariata, Stainton. (Genus *Eupithecia*, Stgr.).

Mr. Stainton says of this species (Ann. & Mag. Nat. Hist., ser. 3, vol. iii., p. 209):—"Allied to *Eupithecia pumilata*, but central portion of the wing darker, the second paler fascia more angulated and indented, and especially distinguished by the reddish fascia on the posterior wings and the reddish spots on the abdomen. Inhabits Madeira proper, Porto Santo, Dezerta Grande, &c."

I have before me upwards of thirty of this insect, and find these differences somewhat variable; it is evidently common at low and intermediate elevations, and seems so close an ally of *pumilata* that I think it is most probably the Madeiran form of that species.

Gymnoscelis bicoloria, n. sp.

Primaries silver-grey, with the dark grey basal area confined by a darker curved line; beyond the centre there is another dark transverse curved line, behind which the whole of the wing is closely dusted with blackish scales, which extend over the said line for its lower portion, and more than half across the inner margin of the wing. There is the least trace of a pale subterminal line close by the posterior margin. Fringes dark grey. Secondaries likewise grey, with the posterior margin darkly dusted, in which dusting there is an interrupted pale line. Fringes grey. Exp. alar. 16 mm.

Of this well-marked species I have but one specimen, which was taken high up about the fir-tree limit.

It may be worthy of remark that of the *Eupitheciæ* at present known from these islands, both of the species belong to the subgenus *Gymnoscelis*.

This completes my list of Macro-Lepidoptera (the *Tineinæ*, &c., being as yet unnamed, will, I hope, be catalogued in a later paper). There does not appear to be anything to call for special remark beyond what has already been done; there is, however, one point that has struck me in looking over the collection. Besides the tendency to great variation there is also a decided tendency to assume a pink or reddish hue. In the South and West African fauna I am informed that this tone of colour is also prevalent, in which case it is interesting to note that in these Atlantic islands we find the meeting-place, if I may so call it, of the Palæartic, Ethiopian, and Nearctic insect fauna; of course, the great majority of insects belong to the former, to which region they (the islands) undoubtedly belong, but the others are also represented by a similarity in colour, or by the Lepidoptera themselves.

EXPLANATION OF PLATE XII.

- FIG. 1. *Rhodocera cleopatra*, v. *maderensis*, Feld.
 1a. " " " under surface.
 2. *Satyrus semele*, v. *maderensis*, Baker.
 2a. " " under surface.
 3. *Hecatera maderæ*, Baker.
 4. *Nonagria sacchari*, Woll.
 5. *Zonosoma maderensis*, Baker (banded form).
 6. *Hemerophila maderæ*, Baker.
 7. *Boarmia Wollastoni*, Baker (typical ♀).
 8. *Eubolia rupicola*, Woll.
 9. *Coremia centro-strigaria*, Woll.